DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control

Memorandum

Date November 28, 1983

From Assistant Section Chief, Investigations Section
Special Studies Branch

Subject Review of Lead Study, Non-Superfund Site

To Frank Lisella, Ph.D., Chief, Environmental Affairs Group
Through: Henry Falk, M.D., _____ HF

Following a request from the U.S. EPA on-scene coordinator for this site, through Louise Fabinski, SIG, we have reviewed the "Study of Lead Pollution in Granite City, Madison and Venice, Illinois, April 1983," by the Illinois Environmental Protection Agency (IEPA).

Two operations, a secondary lead smelter which has been in the area since about 1900, now owned by Taracorp Industries, and a neighboring lead recycling operation (St. Louis Lead Recyclers), are the source of environmental soil and airborne lead contamination in the surrounding community.

The study by IEPA and by the Illinois Department of Public Health (IDPH) was prompted by an unusually high quarterly average ambient lead value, 7.3 mcg/m3, which occurred in the fourth quarter of 1981. Blood samples were drawn from 97 persons, including 46 children, in November and December of 1982 in the context of an environmental assessment of the lead pollution problem.

No children were found with both a blood lead level greater than 30 micrograms per deciliter (mcg/dl) and an FEP level of 50 mcg/dl or higher. A blood lead level of greater than 30 mcg/dl is defined as elevated. If this occurs in conjunction with an FEP of 50 or greater, this is considered to be evidence of undue lead absorption or lead toxicity. The children's average blood lead values were 10 mcg/dl. This average is lower than the national average reported for 1976 - 1980 (1), but the national average is felt to be dropping as leaded gasoline is phased out. In addition, much of the national data was collected in the summer when blood lead levels are higher.

FEP levels may also be elevated in the absence of lead exposure, due to iron deficiency. In fact, recent authors have suggested that FEP be used as a screening test for anemia in young children (2).

The IEPA report has carefully considered dietary, airborne and soil-related pathways and has provided extensive estimates on the relation of blood lead to environmental levels.

For people living within 1/2 mile of the smelter, IDPH and IEPA include some practical recommendations for avoiding lead intake by young children from contaminated dirt.

The environmental sampling appears to have been adequate. Environmental testing of soil cores, 1" in diameter and 1" deep taken from under vegetative cover, show lead levels of 2,000 to 5,000 ppm near the plant, decreasing to 200 ppm at 1 to 2 miles from the plant.

The National Ambient Air Quality Standard (NAAQS) for lead is 1.5 mcg/m^3. This level was exceeded many times over the past three years near this site. However, at the time of the study and for several months preceding the study, air monitoring showed compliance with this standard.

There is no national standard for lead in soil. It is not clear which is more dangerous--airborne lead, or lead in dust from recent emissions, or lead in soil. A recent survey of garden soil lead levels in the Baltimore area showed a median level of more than 100 ppm within the city limits (3). Because garden soils are usually mixed, this probably underestimates the level that would be measured in the top inch of soil. The soil level of 200 ppm which is reportedly recommended by the IDPH for children whose blood levels are elevated (p. 47) is a conservative level. An additional step which could be recommended is the control of house dust by wet mopping twice a month (4).

Conclusion and Recommendations

1. There appears to be no major public health hazard. This conclusion is strengthened by negative findings in two previous surveys and weakened by the timing of the study (in cold weather when children don't play outdoors as much) and the unusually good air quality values.

2. Efforts should continue to control emissions so they do not exceed the NAAQS.

3. As long as there is a lead hazard in the area, young children, especially 1-to-3-year olds, should be regularly screened, preferably two or three times a year for FEP. [Testing could be done in February, May and August for example.] This test may be done with only a few drops of blood from a finger prick, and may be included as part of well child care by local physicians. FEP has recently been proposed as a regular screening test for all children to prevent anemia(2).

David C. Sokal, M.D.

References:

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4. Charney E, Kessler B, Farfel M, and Jackson D., Childhood Lead Poisoning: A Controlled Trial of the Effect of Dust - Control Measures on Blood Lead Levels. New England Journal of Medicine. 309(18): 1089-1093. 1983.